

PTO-1390 (REV. 10-94)		U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE	ATTORNEY'S DOCKET NUMBER
TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371		00-726	U.S. APPLICATION NO. (IF KNOWN, see 37 C.F.R. 1.13)
INTERNATIONAL APPLICATION NO. PCT/IB99/01260	INTERNATIONAL FILING DATE June 21, 1999	PRIORITY DATE CLAIMED June 26, 1998	
TITLE OF INVENTION TREATMENT OF AN ALUMINUM ALLOY MELT			
APPLICANT(S) FOR DO/EO/US HUBERT KOCH			
Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:			
<ol style="list-style-type: none"><input checked="" type="checkbox"/> This is a FIRST submission of items concerning a filing under 35 U.S.C. 371.<input type="checkbox"/> This is a SECOND or SUBSEQUENT submission of items concerning a filing under 35 U.S.C. 371.<input checked="" type="checkbox"/> This express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1).<input checked="" type="checkbox"/> A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.<input checked="" type="checkbox"/> A copy of the International Application as filed (35 U.S.C. 371(c)(2))<ol style="list-style-type: none"><input type="checkbox"/> is transmitted herewith (required only if not transmitted by the International Bureau).<input checked="" type="checkbox"/> has been transmitted by the International Bureau.<input type="checkbox"/> is not required, as the application was filed in the United States Receiving Office (RO/US).<input checked="" type="checkbox"/> A translation of the International Application into English (35 U.S.C. 371(c)(2)).<input type="checkbox"/> Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))<ol style="list-style-type: none"><input type="checkbox"/> are transmitted herewith (required only if not transmitted by the International Bureau).<input type="checkbox"/> have been transmitted by the International Bureau.<input type="checkbox"/> have not been made; however, the time limit for making such amendments has NOT expired.<input type="checkbox"/> have not been made and will not be made.<input type="checkbox"/> A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).<input checked="" type="checkbox"/> An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).<input type="checkbox"/> A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).			
Items 11. to 16. below concern document(s) or information included:			
<ol style="list-style-type: none"><input type="checkbox"/> An Information Disclosure Statement under 37 CFR 1.97 and 1.98.<input checked="" type="checkbox"/> An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.<input checked="" type="checkbox"/> A FIRST preliminary amendment. <input type="checkbox"/> A SECOND or SUBSEQUENT preliminary amendment.<input type="checkbox"/> A substitute specification.<input type="checkbox"/> A change of power-of attorney and/or address letter.<input type="checkbox"/> Other items or information:			

09710900 121800

Page 1 of 2

(January 1995)

I hereby certify that this correspondence is being deposited with the United States Postal Service Express Mail in an envelope addressed to: Commissioner of Patents and Trademarks, Washington, D.C. 20231 on December 18, 2000 (Date of Deposit)
Antoinette Sullo
Name and Reg. No. of Attorney
Antoinette Sullo
Signature
12-18-00
Date of Signature

Express Mail Label No.
EL398544095US

US

Annex US.II, page 2

PCT Applicant's Guide - Volume II - National Chapter - US

JC01 Rec'd PCT/PTO 19 DEC 2000

U.S. APPLICATION NO. (37 CFR 1.53) 09/719900		INTERNATIONAL APPLICATION NO. PCT/IB99/01260		ATTORNEY'S DOCKET NUMBER 00-726	
17. <input checked="" type="checkbox"/> The following fees are submitted:				CALCULATIONS . PTO USE ONLY	
BASIC NATIONAL FEE (37 CFR 1.492(a)(1)-(5)):					
Search Report has been prepared by the EPO or JPO.....				\$860	
International preliminary examination fee paid to USPTO (37 CFR 1.482)				\$660.00	
No international preliminary examination fee paid to USPTO (37 CFR 1.482)					
but international search fee paid to USPTO (37 CFR 1.445(a)(2))..				\$730.00	
Neither international preliminary examination fee (37 CFR 1.482) nor					
international search fee (37 CFR 1.445(a)(2)) paid to USPTO.....				\$980.00	
International preliminary examination fee paid to USPTO (37 CFR 1.482)					
and all claims satisfied provisions of PCT Article 33(2)-(4).....				\$92.00	
ENTER APPROPRIATE BASIC FEE AMOUNT =				\$ 860.00	
Surcharge of \$130.00 for furnishing the oath or declaration later than <input type="checkbox"/> 20 <input type="checkbox"/> 30					
months from the earliest claimed priority date (37 CFR 1.492(e)). See Prel. Amdt.					
CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE		
Total claims	8 -20 =		X \$22.00	\$	
Independent claims	1 -3 =		X \$76.00	\$	
MULTIPLE DEPENDENT CLAIM(S) (if applicable)			+ \$240.00	\$	
TOTAL OF ABOVE CALCULATIONS =				\$ 860.00	
Small Entity Status is claimed under 37 C.F.R. 1.27				\$ -430.00	
SUBTOTAL =				\$ 430.00	
Processing fee of \$130.00 for furnishing the English translation later than <input type="checkbox"/> 20 <input type="checkbox"/> 30					
months from the earliest claimed priority date (37 CFR 1.492(f)).				+ \$ --	
TOTAL NATIONAL FEE =				\$ 430.00	
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be					
accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). \$40.00 per property +				\$ 40.00	
TOTAL FEES ENCLOSED =				\$ 470.00	
				Amount to be:	
				refunded \$	
				charged \$	
a. <input checked="" type="checkbox"/> A check in the amount of \$ 470.00 to cover the above fees is enclosed.					
b. <input type="checkbox"/> Please charge my Deposit Account No. _____ in the amount of \$ _____ to cover the above fees. A duplicate copy of this sheet is enclosed.					
c. <input checked="" type="checkbox"/> The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 02-0184. A duplicate copy of this sheet is enclosed.					
NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.					
SEND ALL CORRESPONDENCE TO: Bachman & LaPointe, P.C. 900 Chapel Street, Suite 1201 New Haven, CT 06510-2802				SIGNATURE <i>Robert H. Bachman</i> NAME Robert H. Bachman REGISTRATION NUMBER 19,374	

09/719900

JCO1 Rec'd PCT/PTO 19 DEC 2000

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : HUBERT KOCH Docket No.: 00-726
Serial No.: Examiner :
Filed : Art Unit :
For : TREATMENT OF AN ALUMINUM
ALLOY MELT

900 Chapel Street
Suite 1201
New Haven, CT 06510-2802

PRELIMINARY AMENDMENT

Hon. Commissioner of Patents and Trademarks
United States Patent and Trademark office
Washington, D.C. 20231

Dear Sir:

In the above-identified application for United States
patent, please amend as follows:

IN THE TITLE

Change "ALUMINIUM" to read --ALUMINUM--.

IN THE ABSTRACT

lines 2 and 7, change "scabbing" to read --dross-forming--.

IN THE SPECIFICATION

Page 1

lines 4, 12 and 29, change "scabbing" to read
--dross-forming--;

lines 15, 23 and 26, change "scab" to read --dross--; and

line 34, change "scabs" to read --drosses--.

Page 2

lines 3, 25 and 26, change "scabbing" to read
--dross-forming--; and

line 12, change "scab-reducing" to read --dross-reducing--.

Page 3

line 24, change "scab" to read --dross--; and
lines 25, 31 and 34, change "scabbing" to read
--dross-forming--.

Page 4

Table 2, column 4, change "Scabbing" to read
--Dross-Forming--; and
last line, change "scabbed" to read --drossed--.

IN THE CLAIMS

Cancel claims 1-6, all the claims in the case, and
substitute the following claims therefor.

7. Process which comprises reducing the susceptibility to
dross-forming of an aluminum alloy melt with a content of at
least 2.5 wt.% magnesium, including adding to the melt from 0.02
to 0.15 wt.% vanadium and less than 60 ppm beryllium.

8. Process according to claim 7, including adding to the melt from 0.02 to 0.08 wt.% vanadium.

9. Process according to claim 8, wherein from 0.02 to 0.05 wt.% vanadium is added to the melt.

10. Process according to claim 7, wherein the melt includes a content of more than 3.5 wt.% magnesium, and including adding 25 to 50 ppm beryllium to the melt.

11. Process according to claim 10, including adding 25 to 35 ppm beryllium to the melt.

12. Process according to claim 7, wherein the melt includes a content of less than 3.5 wt.% magnesium, and including adding less than 25 ppm beryllium to the melt.

13. Process according to claim 7, for the production of casting alloys with

2.5 to 7 wt.% magnesium

max 2.5 wt.% silicon

max 1.6 wt.% manganese

max 0.2 wt.% titanium

max 0.3 wt.% iron

max 0.2 wt.% cobalt

less than 60 ppm beryllium

0.02 to 0.15 wt.% vanadium

and aluminum as the remainder and production-induced contaminants individually max 0.05 wt.% and total max 0.15 wt.%.

14. Process according to claim 13, for the production of diecasting alloys.

R E M A R K S

In accordance with the instant Preliminary Amendment, original claims 1-6 have been canceled and new claims 7-14 substituted therefor in better U.S. format.

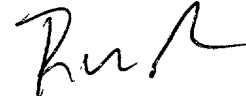
The title and specification have been amended to make straight-forward spelling and grammatical changes.

The English language translation of the originally filed application contained translation errors which have been corrected by this Preliminary Amendment. Thus, the translated terms "scabbing" and "scab" are not correct and should have been translated as "dross-forming" and "dross", respectively. These changes have been made in this Preliminary Amendment.

If any fees are required in connection with this case, it is respectfully requested that they be charged to Deposit Account No. 02-0184.

Respectfully submitted,

HUBERT KOCH

By 
Robert H. Bachman
Attorney for Applicant

Area Code: 203
Telephone: 777-6628
Telefax : 865-0297

Date: December 18, 2000

I hereby certify that this correspondence is being deposited with the United States Postal Service as Express Mail in an envelope addressed to: Commissioner of Patents and Trademarks, Washington, D.C. 20231

Express Mail Label
No. EL398544095US

on December 18, 2000

(Date of Deposit)

Antoinette Sullo

Name and Reg. No. of Attorney



Signature

12-18-00

Date of Signature

Express Mail Label
No. EL398544095US

December 18, 2000

(Date of Deposit)

Antoinette Sullg

Name and Reg. No. of Attorney

Signature

12-18-00

Date of Signature

- 1 -

Treatment of an Aluminium Alloy Melt

The invention concerns a process to reduce the susceptibility to scabbing of an aluminium alloy melt with a content of at least 2.5 w.% magnesium.

On an interruption to work in a foundry, for example over holidays or a weekend, a metal melt ready for casting can be held for more than 50 hours at a melt temperature of 750°C for example. After a long standing time, aluminium magnesium alloys with a high magnesium content have a tendency to scabbing. The presence of magnesium in the melt causes the protective oxide skin, which normally prevents oxidation of the aluminium, to become permeable and the aluminium can react with oxygen. On the melt forms a cauliflower-like scab which consists mainly of spinel ($MgO \cdot Al_2O_3$). This process is reinforced further in the cover heating furnace as the surface temperature of the metal bath, due to the radiant heat of the heating rods in the cover, is very high and convection in the metal bath is prevented by temperature layering. Because of the segregation due to gravitational force, magnesium becomes enriched close to the melt surface and leads to further reinforcement of this effect. The scab forming is very hard, has a cauliflower-like morphology and falls to the base of the crucible so that the entire furnace can be contaminated if the scab is not removed early enough. Scabbing commences earlier the higher the melt temperature.

It is known that the scabbing of aluminium magnesium alloys can be reduced but not totally avoided by the addition of beryllium. It has been observed that the beryllium content of an aluminium magnesium alloy in the melt diminishes with time and evidently, when the beryllium concentration falls below a critical level, scabs rapidly begin to form on the melt. An increased addition of beryllium to the metal melt is undesirable because of the carcinogenic properties of beryllium and should therefore be avoided as far as possible.

The invention is therefore based on the task of using alloy technology measures to lead to a higher scabbing resistance for aluminium magnesium alloys than is possible with an addition of beryllium according to the state of the art.

The task is solved according to the invention in that to the melt is added 0.02 to 0.15 w.% vanadium and less than 60 ppm beryllium.

10

Surprisingly it has been found that by the addition of vanadium, the scab-reducing addition of beryllium can take place in a substantially lower quantity than without the vanadium addition, where in general the addition of vanadium in a quantity of less than 0.05 w.% is sufficient even in alloys with a content of more than 5 w.% magnesium.

Preferably 0.02 to 0.08 w.% vanadium, in particular 0.02 to 0.05 w.% vanadium, is added to the melt.

20

For a content of more than 3.5 w.% magnesium, the addition of 25 to 50 ppm beryllium is sufficient, preferably 25 to 35 ppm beryllium. If the content of magnesium in the melt is less than 3.5 w.%, less than 25 ppm beryllium is required to achieve a high scabbing resistance. For lower requirements for the scabbing tendency, the beryllium addition can even be omitted completely.

A preferred use of the process according to the invention lies in the production of casting alloys with

2.5 to 7 w.% magnesium

max 2.5 w.% silicon

max 1.6 w.% manganese

max 0.2 w.% titanium

35 max 0.3 w.% iron

max 0.2 w.% cobalt

less than 60 ppm beryllium

0.02 to 0.15 w.% vanadium

and aluminium as the remainder and production-induced contaminants individually max 0.05 w. % and total max 0.15 w. %.

5 The process according to the invention is particularly preferred for use in production of diecasting alloys.

Further advantages, features and details of the invention arise from the description of exemplary embodiments below.

10

Approximately 50 kg of a magnesium aluminium alloy with different beryllium and vanadium content in each case were melted in a crucible in the induction furnace. The crucible was then transferred to a resistance furnace and there held at a temperature of 750°C. The chemical analysis (in w.%) of the batches tested are summarised in table 1. Batches 1, 3 and 4 have a vanadium content according to the invention, batch 2 has a vanadium content lying outside the range according to the invention.

20

At specific time intervals, samples were taken from the different batches to determine the chemical composition. The melt surface was also observed at specific time intervals in order to determine the time of increased scab formation. Table 2 shows the time up to scabbing of the melt as a function of the beryllium and vanadium content of the alloy. The results suggest that at least in the tested aluminium magnesium alloys with a high magnesium content, a low quantity of beryllium need be present in the melt in addition to the proportion of vanadium according to the invention in order to achieve a high resistance to scabbing. Secondly, with the addition of vanadium in the range according to the invention, a beryllium content of around 25 ppm is sufficient to increase substantially the scabbing resistance.

Table 1

Batch	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Be	V
1	2.36	0.08	<0.001	0.78	5.31	<0.001	0.002	0.13	0.0011	0.072
2	2.30	0.08	<0.001	0.74	5.69	<0.001	0.01	0.11	0.0043	0.0052
3	2.37	0.08	<0.001	0.79	5.28	<0.001	0.002	0.12	0.0026	0.080
4	2.38	0.08	<0.001	0.78	5.27	<0.001	0.002	0.08	0.0026	0.072
5	2.47	0.11	<0.001	0.70	6.29	<0.001	0.006	0.13	0.0033	0.021
6	2.13	0.09	<0.001	0.70	5.61	<0.002	0.005	0.15	0.0025	0.045

Table 2

Batch	Be content [ppm]	V content [w. %]	Time until Scabbing [h]
1	11	0.072	68
2	43	0.005	63
3	26	0.080	158
4	26	0.072	139 *)
5	33	0.021	160 *)
6	25	0.045	171 *)

*) Not scabbed, test interrupted.

CLAIMS

1. Process to reduce the susceptibility to scabbing of an aluminium alloy melt with a content of at least 2.5 w.% magnesium,
characterised in that
to the melt is added 0.02 to 0.15 w.% vanadium and less than 60 ppm beryllium.
2. Process according to claim 1, characterised in that to the melt is added 0.02 to 0.08 w.% vanadium, preferably 0.02 to 0.05 w.% vanadium.
3. Process according to claim 1 or 2, characterised in that to the melt with a content of more than 3.5 w.% magnesium is added 25 to 50 ppm beryllium, preferably 25 to 35 ppm beryllium.
4. Process according to claim 1 or 2, characterised in that to the melt with a content of less than 3.5 w.% magnesium is added less than 25 ppm beryllium.
5. Use of the process according to any of claims 1 to 4 for production of casting alloys with
2.5 to 7 w.% magnesium
max 2.5 w.% silicon
max 1.6 w.% manganese
max 0.2 w.% titanium
max 0.3 w.% iron
max 0.2 w.% cobalt
less than 60 ppm beryllium
0.02 to 0.15 w.% vanadium
and aluminium as the remainder and production-induced contaminants individually max 0.05 w.% and total max 0.15 w.%.
6. Use of the process according to claim 5 to produce diecasting alloys.

ABSTRACT

In a process to reduce the susceptibility to scabbing of an aluminium alloy melt with a content of at least 2.5 w.% magnesium, to the melt is added 0.02 to 0.15 w.% vanadium and less than 60 ppm beryllium. By the addition of vanadium, the beryllium addition can be reduced and at the same time the scabbing resistance of the melt increased.

Practitioner's Docket No. 00-726

PATENT

COMBINED DECLARATION AND POWER OF ATTORNEY

(ORIGINAL, DESIGN, NATIONAL STAGE OF PCT, SUPPLEMENTAL, DIVISIONAL, CONTINUATION, OR C-I-P)

As a below named inventor, I hereby declare that:

TYPE OF DECLARATION

This declaration is of the following type:

(check one applicable item below)

original.

design.

NOTE: With the exception of a supplemental oath or declaration submitted in a reissue, a supplemental oath or declaration is not treated as an amendment under 37 CFR 1.312 (Amendments after allowance). M.P.E.P. § 714.16, 7th Edition.

☐ supplemental.

NOTE: If the declaration is for an International Application being filed as a divisional, continuation or continuation-in-part application, do not check next item; check appropriate one of last three items.

☒ national stage of PCT.

NOTE: If one of the following 3 items apply, then complete and also attach ADDED PAGES FOR DIVISIONAL, CONTINUATION OR C-I-P.

NOTE: See 37 C.F.R. § 11.63(d) (continued prosecution application) for use of a prior nonprovisional application declaration in the continuation or divisional application being filed on behalf of the same or fewer of the inventors named in the prior application.

☐ divisional.☐ continuation.

NOTE: Where an application discloses and claims subject matter not disclosed in the prior application, or a continuation or divisional application names an inventor not named in the prior application, a continuation-in-part application must be filed under 37 C.F.R. § 1.53(b) (application filing requirements — nonprovisional application).

☐ continuation-in-part (C-I-P).

INVENTORSHIP IDENTIFICATION

WARNING: If the inventors are each not the inventors of all the claims, an explanation of the facts, including the ownership of all the claims at the time the last claimed invention was made, should be submitted.

My residence, post office address and citizenship are as stated below, next to my name. I believe that I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter that is claimed, and for which a patent is sought on the invention entitled:

TITLE OF INVENTION

TREATMENT OF AN ALUMINUM ALLOY MELT

SPECIFICATION IDENTIFICATION

the specification of which:

(complete (a), (b), or (c))

(a) ☒ is attached hereto.

NOTE: "The following combinations of information supplied in an oath or declaration filed on the application filing date with a specification are acceptable as minimums for identifying a specification and compliance with any one of the items below will be accepted as complying with the identification requirement of 37 CFR 1.63:

"(1) name of inventor(s), and reference to an attached specification which is both attached to the oath or declaration at the time of execution and submitted with the oath or declaration on filing;

"(2) name of inventor(s), and attorney docket number which was on the specification as filed;
or

"(3) name of inventor(s), and title which was on the specification as filed."

Notice of July 13, 1995 (1177 O.G. 60).

(b) ☐ was filed on _____, as ☐ Serial No. 0 / _____
or ☐ _____
and was amended on _____ (if applicable).

NOTE: Amendments filed after the original papers are deposited with the PTO that contain new matter are not accorded a filing date by being referred to in the declaration. Accordingly, the amendments involved are those filed with the application papers or, in the case of a supplemental declaration, are those amendments claiming matter not encompassed in the original statement of invention or claims. See 37 C.F.R. § 1.67.

NOTE: "The following combinations of information supplied in an oath or declaration filed after the filing date are acceptable as minimums for identifying a specification and compliance with any one of the items below will be accepted as complying with the identification requirement of 37 CFR 1.63:

"(A) application number (consisting of the series code and the serial number, e.g., 08/123,456);

"(B) serial number and filing date;

"(C) attorney docket number which was on the specification as filed;

"(D) title which was on the specification as filed and reference to an attached specification which is both attached to the oath or declaration at the time of execution and submitted with the oath or declaration; or

"(E) title which was on the specification as filed and accompanied by a cover letter accurately identifying the application for which it was intended by either the application number (consisting of the series code and the serial number, e.g., 08/123,456), or serial number and filing date. Absent any statement(s) to the contrary, it will be presumed that the application filed in the PTO is the application which the inventor(s) executed by signing the oath or declaration."

M.P.E.P. § 601.01(a), 7th Ed.

(c) ☒ was described and claimed in PCT International Application No. PCT/IB99/01260, filed on June 21, 1999 and as amended under PCT Article 19 on _____ (if any).

(Declaration and Power of Attorney [1-1]—page 2 of 7)

SUPPLEMENTAL DECLARATION (37 C.F.R. § 1.67(b))*(complete the following where a supplemental declaration is being submitted)*

- ☐ I hereby declare that the subject matter of the
- ☐ attached amendment
 - ☐ amendment filed on _____

was part of my/our invention and was invented before the filing date of the original application, above-identified, for such invention.

ACKNOWLEDGEMENT OF REVIEW OF PAPERS AND DUTY OF CANDOR

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information, which is material to patentability as defined in 37, Code of Federal Regulations, § 1.56,

(also check the following items, if desired)

- ☒ and which is material to the examination of this application, namely, information where there is a substantial likelihood that a reasonable Examiner would consider it important in deciding whether to allow the application to issue as a patent, and
- ☐ in compliance with this duty, there is attached an information disclosure statement, in accordance with 37 C.F.R. § 1.98.

PRIORITY CLAIM (35 U.S.C. §§ 119(a)-(d))

NOTE: "The claim to priority need be in no special form and may be made by the attorney or agent if the foreign application is referred to in the oath or declaration as required by § 1.63. The claim for priority and the certified copy of the foreign application specified in 35 U.S.C. 119(b) must be filed in the case of an interference (§ 1.630), when necessary to overcome the date of a reference relied upon by the examiner, when specifically required by the examiner, and in all other situations, before the patent is granted. If the claim for priority or the certified copy of the foreign application is filed after the date the issue fee is paid, it must be accompanied by a petition requesting entry and by the fee set forth in § 1.17(f). If the certified copy is not in the English language, a translation need not be filed except in the case of interference; or when necessary to overcome the date of a reference relied upon by the examiner; or when specifically required by the examiner, in which event an English language translation must be filed together with a statement that the translation of the certified copy is accurate." 37 C.F.R. § 1.55(a).

I hereby claim foreign priority benefits under Title 35, United States Code, §§ 119(a)-(d) of any foreign application(s) for patent or inventor's certificate or of any PCT international application(s) designating at least one country other than the United States of America listed below and have also identified below any foreign application(s) for patent or inventor's certificate or any PCT international application(s) designating at least one country other than the United States of America filed by me on the same subject matter having a filing date before that of the application(s) of which priority is claimed.

(complete (d) or (e))

- (d) ☐ no such applications have been filed.
- (e) ☒ such applications have been filed as follows.

NOTE: Where item (c) is entered above and the International Application which designated the U.S. itself claimed priority check item (e), enter the details below and make the priority claim.

(Declaration and Power of Attorney [1-1]—page 3 of 7)

**PRIOR FOREIGN/PCT APPLICATION(S) FILED WITHIN 12 MONTHS
(6 MONTHS FOR DESIGN) PRIOR TO THIS APPLICATION
AND ANY PRIORITY CLAIMS UNDER 35 U.S.C. § 119(a)-(d)**

COUNTRY (OR INDICATE IF PCT)	APPLICATION NUMBER	DATE OF FILING (day, month, year)	PRIORITY CLAIMED UNDER 37 USC 119
Europe	98810594.6	26.06.98	<input checked="" type="checkbox"/> YES NO <input type="checkbox"/>
			<input type="checkbox"/> YES NO <input type="checkbox"/>
			<input type="checkbox"/> YES NO <input type="checkbox"/>
			<input type="checkbox"/> YES NO <input type="checkbox"/>
			<input type="checkbox"/> YES NO <input type="checkbox"/>

CLAIM FOR BENEFIT OF PRIOR U.S. PROVISIONAL APPLICATION(S)
(34 U.S.C. § 119(e))

I hereby claim the benefit under Title 35, United States Code, § 119(e) of any United States provisional application(s) listed below:

PROVISIONAL APPLICATION NUMBER	FILING DATE
_____ / _____	_____
_____ / _____	_____
_____ / _____	_____

CLAIM FOR BENEFIT OF EARLIER US/PCT APPLICATION(S)
UNDER 35 U.S.C. § 120

- ☐ The claim for the benefit of any such applications are set forth in the attached ADDED PAGES TO COMBINED DECLARATION AND POWER OF ATTORNEY FOR DIVISIONAL, CONTINUATION OR CONTINUATION-IN-PART (C-I-P) APPLICATION.

(Declaration and Power of Attorney [1-1]—page 4 of 7)

**ALL FOREIGN APPLICATION(S), IF ANY, FILED MORE THAN 12 MONTHS
(6 MONTHS FOR DESIGN) PRIOR TO THIS U.S. APPLICATION**

NOTE: If the application filed more than 12 months from the filing date of this application is a PCT filing forming the basis for this application entering the United States as (1) the national stage, or (2) a continuation, divisional, or continuation-in-part, then also complete ADDED PAGES TO COMBINED DECLARATION AND POWER OF ATTORNEY FOR DIVISIONAL, CONTINUATION OR C-I-P APPLICATION for benefit of the prior U.S. or PCT application(s) under 35 U.S.C. § 120.

POWER OF ATTORNEY

I hereby appoint the following practitioner(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith.

(list name and registration number)

Robert H. Bachman (19,374), Gregory P. LaPointe (28,395),
Barry L. Kelmachter (29,999) and George A. Coury (34,309)

(check the following item, if applicable)

- ☐ I hereby appoint the practitioner(s) associated with the Customer Number provided below to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith.
- ☐ Attached, as part of this declaration and power of attorney, is the authorization of the above-named practitioner(s) to accept and follow instructions from my representative(s).

NOTE: "Special care should be taken in continuation or divisional applications to ensure that any change of correspondence address in a prior application is reflected in the continuation or divisional application. For example, where a copy of the oath or declaration from the prior application is submitted for a continuation or divisional application filed under 37 CFR 1.53(b) and the copy of the oath or declaration from the prior application designates an old correspondence address, the Office may not recognize, in the continuation or divisional application, the change of correspondence address made during the prosecution of the prior application. Applicant is required to identify the change of correspondence address in the continuation or divisional application to ensure that communications from the Office are mailed to the current correspondence address. 37 CFR 1.63(d)(4)." § 601.03, M.P.E.P., 7th Edition.

SEND CORRESPONDENCE TO

DIRECT TELEPHONE CALLS TO:
(Name and telephone number)

☒ Address

Bachman & LaPointe, P.C.
900 Chapel Street, Suite 1201
New Haven, CT 06510-2802

Robert H. Bachman
(203) 777-6628

☐ Customer Number _____

(complete the following if applicable)

Since this filing is a ☐ continuation ☐ divisional there is attached hereto a Change of Correspondence Address so that there will be no question as to where the PTO should direct all correspondence.

(Declaration and Power of Attorney [1-1]—page 5 of 7)

DECLARATION

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

SIGNATURE(S)

NOTE: Carefully indicate the family (or last) name, as it should appear on the filing receipt and all other documents.

NOTE: Each inventor must be identified by full name, including the family name, and at least one given name without abbreviation together with any other given name or initial, and by his/her residence, post office address and country of citizenship. 37 CFR § 1.63(a)(3).

NOTE: Inventors may execute separate declarations/oaths provided each declaration/oath sets forth all the inventors. Section 1.63(a)(3) requires that a declaration/oath, inter alia, identify each inventor and prohibits the execution of separate declarations/oaths which each sets forth only the name of the executing inventor. 62 Fed. Reg. 53,131, 53,142, October 10, 1997,

Full name of sole or first inventor

HUBERT

(GIVEN NAME)

(MIDDLE INITIAL OR NAME)

KOCH

FAMILY (OR LAST NAME)

Inventor's signature

Date

17 DEC 2003

Country of Citizenship

GERMANY

Residence

Werthstrasse 16, D-79618 Rheinfelden, Germany

Post Office Address

GERMANY

Full name of second joint inventor, if any

(GIVEN NAME)

(MIDDLE INITIAL OR NAME)

FAMILY (OR LAST NAME)

Inventor's signature

Date

Country of Citizenship

Residence

Post Office Address

Full name of third joint inventor, if any

(GIVEN NAME)

(MIDDLE INITIAL OR NAME)

FAMILY (OR LAST NAME)

Inventor's signature

Date

Country of Citizenship

Residence

Post Office Address

(Declaration and Power of Attorney [1-1]—page 6 of 7)

(check proper box(es) for any of the following added page(s)
that form a part of this declaration)

- ☐ **Signature** for fourth and subsequent joint inventors. *Number of pages added* _____

* * *

- ☐ **Signature** by administrator(trix), executor(trix) or legal representative for deceased or incapacitated inventor. *Number of pages added* _____

* * *

- ☐ **Signature** for inventor who refuses to sign or cannot be reached by person authorized under 37 CFR 1.47. *Number of pages added* _____

* * *

- ☐ Added page for **signature** by one joint inventor on behalf of deceased inventor(s) where legal representative cannot be appointed in time. (37 CFR 1.47)

* * *

- ☐ Added pages to combined declaration and power of attorney for divisional, continuation, or continuation-in-part (C-I-P) application.

☐ Number of pages added _____

* * *

- ☐ Authorization of practitioner(s) to accept and follow instructions from representative.

1

* * *

(if no further pages form a part of this Declaration,
then end this Declaration with this page and check the following item)

- ☒ This declaration ends with this page.